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ABSTRACT

Tennessee is in the process of implementing a computer literacy plan for grades 7 and 8. Determining the views of teachers in those grades about computers, what they think students should be taught about computers, and the extent to which they agree with aspects of the plan was the goal of this survey. Data were analyzed from 122 teachers and principals in a large metropolitan school system. It appears that a substantial number of teachers have had no direct experience with computers; thus training is needed. Only one-fifth of the schools in the district have microcomputers for student use. The teachers had positive views about computer education. Those who had operated or programmed a computer were generally more positive in their attitudes toward computer literacy. Data and the questionnaire are both included. (MNS)

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COMPUTER EDUCATION - A SURVEY OF SEVENTH AND EIGHTH GRADE TEACHERS

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COMPUTER EDUCATION - A SURVEY OF SEVENTH AND EIGHTH GRADE TEACHERS

In the fall of 1982, the State of Tennessee Department of Education released a draft copy of "Computer Skills Next," a two year computer literacy plan for grades seven and eight in Tennessee public schools. The plan proposes a 15 hour program for students in each of grades seven and eight with content in the basic areas of "history, computer operations, computer applications, logic and problem solving, social impact and terminology." (p. iii) This content is to be taught by existing seventh and eighth grade teachers who will be provided with summer training programs. In fact, it has been recommended that all seventh and eighth grade teachers be provided with some computer training, ranging from two days to two weeks.

Governor Lamar Alexander included "Computer Skills Next" as the second point in his State of Education address given on January 28, 1983. In that presentation, he stated that the program starts next year (1983-84) in order for every eighth grader in Tennessee to become computer literate.

Obviously, such a plan cannot succeed without the support of the teachers who would be expected to implement the plan. A first step in ascertaining the level of this support is to assess seventh and eighth grade teachers to determine their feelings about computers, what they think seventh and eighth grade students should be taught about computers, and the extent to which they agree with aspects of the plan. Determining these views of teachers from one metropolitan community was the goal of this survey.

Sample

The subjects for this descriptive study consisted of teachers and principals from seventh and eighth grade schools in a large metropolitan school system in Tennessee. A random sample of 200 teachers was selected from a population of approximately 400 and all 17 principals from these schools were included in the sample. This resulted in a total sample of 217 teachers and principals who received the questionnaire. The sample for which data were analyzed consisted of 122 teachers and principals who completed and returned the questionnaire. The percent of return was 56%.

Instrument

The questionnaire used to gather data was constructed by the investigators. The first part of the questionnaire asked questions about teachers' sex, experience, and whether they had used or programmed microcomputers. It was designed to assess teachers' experience and knowledge of computers and computer education. The second part consisted of 30 items divided into three subscales - a feelings or attitude subscale consisting of seven items; a computer literacy subscale consisting of 14 items; and a state plan subscale consisting of nine items. (See appendix for a copy of the questionnaire.) Teachers responded to each item by recording a number from 1-5 where 1 corresponded to strongly disagree, 2 to disagree, 3 to undecided, 4 to agree, and 5 to strongly agree. Most of the items were written so that a response of 5 was the most positive response; however, to prevent a response set, several of the items were written in a

negative manner. For these items, the numerical response was reversed for data analysis.

The feelings subscale was designed to gather data relating to how teachers felt about computers. Included in this subscale were items assessing teachers' attitudes and two items which dealt with sex related differences when working with computers. The computer literacy subscale was designed to gather data on teachers' views about computer use in the seventh and eighth grades. This included their feelings about incorporating the computer into their classrooms as a learning tool, its value in motivating students, and its educational benefits both for present and future learning. The state plan subscale gathered information pertaining to teachers' knowledge of and feelings about the "Computers Skills Next" state plan.

Reliability coefficients were computed for each subscale using Cronbach's alpha. These values were .69 for the feelings subscale, .84 for the computer literacy subscale, and .85 for the state plan subscale.

Questionnaires were sent to all members of the sample. Included in the envelope were the questionnaire, a letter from the investigators explaining the purpose of the study, and a letter from the Director of Research in the metropolitan school system in which he indicated his support for the project.

Results

Table 1 contains summaries of selected background information gathered on members of the sample in part 1 of the questionnaire. Since there were

(INSERT TABLE 1 HERE)

so few principals responding to the questionnaire, they were grouped with the teacher sample for data analysis purposes. Included in this table are data relating to years of experience, use of microcomputers, availability of microcomputers in the schools, and sex. A few of the subjects omitted a response to one of these questions; hence not all categories sum to 122, the total number of respondents.

From the number of negative responses to the questions, "Have you ever operated a microcomputer?" and "Do you know how to program a computer?", it appears a substantial number of teachers have no direct experience with computers. From this, we infer that there is a need for formal education for seventh and eighth grade teachers in computer literacy and computer education. Without this training, teachers will not be able to effectively use microcomputers as an educational tool in their classrooms. Years of experience data indicate that the teachers in our sample have received their teacher education before microcomputers became popular. This may help to explain why so few teachers have been exposed to microcomputers, that is, it may be due in part to having received their education over a decade ago when microcomputers were not generally available.

Another result of interest in this table is that only about one-fifth of the schools in this metropolitan school district have microcomputers for student use. If the "Computer Skills Next" program is implemented, there will need to be a substantial upgrading in the number of computers available in the junior high schools.

Table 2 presents the mean responses to the items on part 2 of the questionnaire. Mean responses for various subgroups within the sample are

(INSERT TABLE 2 HERE)

also reported in this table. A single star in the table indicates mean responses for subgroups that were different at the .05 level of significance; double stars indicate a probability level for the difference of means at least this large between .05 and .1.

Examination of Table 2 indicates that the sample of teachers viewed computer education in a positive manner. Total mean scores on the items ranged from 3.43 (slightly positive) to 4.65 (strongly positive). The subscale scores of 4.30, 3.91, and 3.79 all indicated positive views pertaining to computer education.

On the items in the feelings subscale, the subgroup that had operated a microcomputer scored higher on each item than the subgroup that had not operated a computer. This was also true when comparing subjects who had programmed a computer to those who had not programmed a computer. In both cases, there were several individual items that had significantly different mean scores, and the mean scores for the subscales were significantly different. This would indicate that those who have had experiences with

computers would enjoy learning more about computers and feel more confident about their ability to work with computers than subjects without these experiences. There was only one significant difference on the feelings scale when mean responses of males and females were compared. In this case, females had a more positive response than males to the item that stated, "Males and females are equally capable of working with computers."

On the literacy subscale, the views of the subgroups are not as clear-cut as they were on the feelings subscale. In most cases, the groups who had operated a computer or programmed a computer were more positive in their attitudes toward computer literacy. Items 8, 11, and 18 indicated a consistent pattern of significant differences. For items 8 and 18, teachers who have worked with computers are less likely to think that there is an overemphasis on computers in schools or that computers are gaining too much control over peoples' lives. Responses to item 11 indicate that teachers who have some experience with computers feel more positive about keeping up with resulting changes in computer education.

On the State Plan subscale, the only significant difference was on item 27 when comparing the male subgroup to the female subgroup. Females viewed the ability to apply program writing skills to problem solving as an objective of the state plan more positively than did males.

Conclusions

Based upon the findings, the following conclusions have been drawn:

1. Teachers have a positive attitude toward implementation of computers in the seventh and eighth grades.

2. Experience with computers is related to feelings about computers - the more experience the more positive the feelings.
3. Formal training for junior high school teachers relating to computers and their use in the classrooms is needed.

Table 1. Numbers of Teachers in Categories

Characteristic	Response Options and Numbers		
Years Experience	1-3 years	4-10 years	over 10 years
Number	3	19	99
Operated Microcomputer	Yes	No	
Number	45	77	
Programmed Microcomputer	Yes	No	
Number	20	101	
Microcomputer in School	Yes	No	
Number	24	98	
Sex	Female	Male	
Number	73	48	

Table 2. Mean Response to each item and subscale for subgroups within the sample.

Question	Operate Comp Yes	Operate Comp No		Program Comp Yes	Program Comp No		Sex Female	Sex Male		Total Sample
1	4.20	3.90		4.30	3.95		3.89	4.19		4.01
2	4.51	4.00	*	4.55	4.12	**	4.10	4.33		4.19
3	4.69	4.48		4.75	4.51	**	4.59	4.50		4.55
4	4.36	4.09		4.55	4.11	*	4.21	4.15		4.19
5	4.42	4.01	*	4.55	4.09	*	4.14	4.19		4.16
6	4.80	4.56	**	4.65	4.64		4.82	4.40	*	4.65
20	4.60	4.21	*	4.75	4.27	*	4.40	4.29		4.35
Feelings Subscale	4.51	4.18	*	4.59	4.24	*	4.31	4.29		4.30
7	3.89	3.61		4.00	3.64		3.81	3.60		3.71
8	3.87	3.47	*	4.10	3.50	*	3.63	3.62		3.62
9	4.40	4.17	**	4.50	4.21		4.18	4.38		4.25
10	4.51	4.22	*	4.50	4.30		4.26	4.46		4.33
11	4.27	3.97	*	4.55	4.00	*	4.11	4.06		4.08
12	3.91	3.81		4.00	3.81		3.81	3.92		3.84
13	4.13	4.44	**	4.25	4.34		4.23	4.50		4.33
14	3.36	3.52		3.60	3.44		3.45	3.48		3.46
15	3.62	3.57		3.65	3.58		3.58	3.63		3.59
16	3.80	3.70		3.85	3.72		3.71	3.79		3.74
17	4.49	4.66		4.55	4.62		4.63	4.60		4.60
18	3.78	3.23	*	3.90	3.36	*	3.37	3.52		3.43
19	3.62	3.52		3.70	3.53		3.55	3.60		3.56
21	4.22	4.13		4.10	4.18		4.12	4.25		4.16
Literacy Subscale	3.99	3.86		4.09	3.87	**	3.89	3.96		3.91
22	3.91	3.66		3.95	3.71		3.78	3.73		3.75
23	3.60	3.51		3.80	3.49		3.56	3.52		3.54
24	3.40	3.52		3.30	3.52		3.41	3.58		3.48
25	4.13	4.06		4.20	4.07		4.11	4.08		4.09
26	4.02	4.08		4.10	4.05		4.12	3.98		4.06
27	4.02	3.95		4.20	3.94		4.10	3.81	*	3.98
28	3.78	3.58		3.90	3.60		3.73	3.56		3.66
29	3.76	3.78		3.85	3.76		3.67	3.94	**	3.77
30	4.02	3.70	**	4.05	3.77		3.78	3.90		3.82
State Plan Subscale	3.85	3.76		3.93	3.77		3.81	3.79		3.79

* Indicates a significant difference at .05 level of significance.
** Indicates a probability between .05 and .10.

Background information:

INSTRUCTIONS: From the choices listed after each question, choose your response and enter the corresponding number in the box to the right.

1. What is your subject area? [ ]

   1. Art 2. Foreign Language 3. Language
   4. Mathematics 5. Music 6. Physical Education
   7. Science 8. Social Studies 9. Other

2. How many years have you taught? [ ]

   1. 1-3 yrs. 2. 4-10 yrs. 3. over 10 yrs.

3. Have you ever operated a microcomputer? [ ]

   1. Yes 2. No

4. Do you know how to program a computer? [ ]

   1. Yes 2. No

5. Is/are there one or more microcomputers available for instructional purposes, which are directly used by students, in your school? [ ]

   1. Yes 2. No

6. What is your sex? [ ]

   1. Female 2. Male

INSTRUCTIONS:

Indicate how much you DISAGREE or AGREE with each of the following statements by entering in the box to the right of each statement one of the following:

1. strongly disagree, 2. disagree, 3. undecided, 4. agree, 5. strongly agree

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	strongly disagree	disagree	undecided	agree	strongly agree	
1. The idea of working with computers makes me feel tense.	1	2	3	4	5	[ ]
2. I feel uneasy when people talk about computers.	1	2	3	4	5	[ ]
3. I would enjoy learning more about computers.	1	2	3	4	5	[ ]
4. I would like to work with computers.	1	2	3	4	5	[ ]
5. I feel I am not the kind of person who works well with computers.	1	2	3	4	5	[ ]
6. Males and females are equally capable of working with computers.	1	2	3	4	5	[ ]
7. Without computer literacy, students will have limited job opportunities.	1	2	3	4	5	[ ]
8. Schools are placing too much emphasis on the importance of computers in education.	1	2	3	4	5	[ ]
9. The computer can be an effective tool in many areas of education including language arts, mathematics, science, and social science.	1	2	3	4	5	[ ]
10. Junior high school students can benefit from hands-on experience with computers.	1	2	3	4	5	[ ]
11. If computer literacy becomes a part of the curriculum, I will be able to keep up with the resulting changes.	1	2	3	4	5	[ ]

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		strongly disagree	disagree	undecided	agree	strongly agree	
12.	I would change my present teaching strategies if necessary to improve computer literacy among my students.	1	2	3	4	5	[ ]
13.	Computer specialists should be provided to consult with teachers on computer applications in the classroom.	1	2	3	4	5	[ ]
14.	Computers will motivate disinterested students.	1	2	3	4	5	[ ]
15.	The use of computers will help to develop students' creativity.	1	2	3	4	5	[ ]
16.	Computers will help teachers to individualize instruction.	1	2	3	4	5	[ ]
17.	Computers will never replace the teacher in the classroom.	1	2	3	4	5	[ ]
18.	Computers are gaining too much control over people's lives.	1	2	3	4	5	[ ]
19.	Computers will have a positive influence on the students' attitude toward school.	1	2	3	4	5	[ ]
20.	Men are better computer programmers than women.	1	2	3	4	5	[ ]
21.	Junior high school students should begin to learn about the role that computers play in our society.	1	2	3	4	5	[ ]
22.	The Tennessee State Computer Literacy Plan should be implemented.	1	2	3	4	5	[ ]
23.	The Tennessee State Computer Literacy Plan can be effectively implemented.	1	2	3	4	5	[ ]
24.	A knowledge of the historical development of the computer should be an objective as stated in the plan.	1	2	3	4	5	[ ]
25.	Operating the computer should be an objective as stated in the plan.	1	2	3	4	5	[ ]
26.	Learning the applications of the computer in the schools and in society should be an objective as stated in the plan.	1	2	3	4	5	[ ]
27.	The ability to apply program writing skills to a problem-solving situation should be an objective as stated in the plan.	1	2	3	4	5	[ ]
28.	Most seventh and eighth graders are capable of achieving the objectives of the plan.	1	2	3	4	5	[ ]
29.	The teacher training suggested in the plan will enable me to use the computer as a learning tool in my class.	1	2	3	4	5	[ ]
30.	Implementing programs that provide computer literacy for students and teachers will be a wise choice of spending the state's educational funds.	1	2	3	4	5	[ ]

THANK YOU VERY MUCH FOR YOUR COOPERATION ON THIS IMPORTANT PROJECT. PLEASE RETURN THE QUESTIONNAIRE USING THE ENCLOSED ADDRESSED, PRESTAMPED ENVELOPE.

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